2009 – 2014 TECHNOLOGY ENGINEERING EDUCATION
MIDDLE SCHOOL COURSES

EXPLORING TECHNOLOGY

COURSE ABSTRACTS

In Exploring Technology, students develop an understanding of the progression and scope of technology through exploratory experiences. In group and individual activities, students experience ways in which technological knowledge and processes contribute to effective designs and solutions to technological problems. Students participate in design activities to understand how criteria, constraints, and processes affect designs. Brainstorming, visualizing, modeling, constructing, testing, and refining designs provide firsthand opportunities for students to understand the uses and impacts of innovations. Students develop skills in communicating design information and reporting results.

In this course it is expected that students participate in all activities and gain new experiences. It is critical that students bridge their knowledge in mathematics and science so as to enhance their comprehension of technology. This course is a cornerstone for a middle school technology engineering education program.

COURSE CONTENT

Unit 1	**Technology in Motion**
Unit 2	**Push – Pull Manufacturing**
Unit 3	**Automation: Good or Bad?**
Unit 4	**Greenhouse Design**

INVENTIONS AND INNOVATONS

COURSE ABSTRACTS – GRADE 7

Inventions and Innovations provide students with opportunities to apply the design process in the invention or innovation of a new product, process, or system. In this course, students will learn all about invention and innovation. They will have opportunities to study the history of inventions and innovations, including their impacts on society. They will learn about the core concepts of technology, and about the various approaches to solving problems, including engineering design, sketching, basic drafting and experimentation. Students will apply their creativity in the invention and innovation of new products, processes, or systems. Finally students will learn about how various inventions and innovations impact their lives.

Students participate in engineering-design activities to understand how criteria, constraints, and processes affect designs. Students are involved in activities and experiences where they learn about brainstorming, visualizing, modeling, constructing, testing, experimenting, and refining designs. Students will also develop skills in researching for information, communicating design information and reporting results.

COURSE CONTENT

Unit 1	**Core Concepts of Technology**
Unit 2	**Introduction to Invention and Innovation**
Unit 3	**Problem Solving, Design, Troubleshooting, Research and Experimentation**
Unit 4	**Let's Invent and Innovate**
Unit 5	**Impacts of Invention and Innovation**

TECHNOLOGICAL SYSTEMS

COURSE ABSTRACTS – GRADE 8

This course is intended to teach students how technological systems work together to solve problems and capture opportunities. A system can be as small as two components working together (technical system/device) or can contain millions of interacting devices (user system/network level). We often break down the macro systems into less complicated Microsystems in order to understand the entire system better. However, technology is becoming more integrated, and systems are becoming more and more dependent upon each other than ever before.

This course will give students a general background on the different types of systems but will concentrate more on the connections between these systems. This course will give students a general background on the different types of systems, but will concentrate more on the connections between systems.

This is the capstone middle school course and provides the foundation for future studies in a Technology Engineering Education sequence.

COURSE CONTENT

Unit 1	**Definition of a System**
Unit 2	**Systems Interaction**
Unit 3	**Systems Evolution**
Unit 4	**Systems Adjustments**
Unit 5	**Systems Failure**
Unit 6	**System Trends**